

CLAIM AMENDMENTS

Claims 9-22 were previously withdrawn by the Examiner. The following listing of claims replaces all prior versions and listings of claims in the application.

1. **(Original)** A thin film interleaver for use in CWDM fiber-optic multiplexing and demultiplexing, the thin film interleaver comprising:

a dual fiber collimator comprising:

an optical substrate;

a thin film portion applied to the optical substrate, the thin film portion formed to allow a first group of channels to pass through the thin film portion while reflecting a second group of channels each of the first group of channels being adjacent to at least one of the channels in the second group of channels;

an input fiber for receiving an optical signal comprised of the first and second groups of channels;
and

a reflection fiber for receiving the second group of channels after they have been reflected by the thin film portion.

2. **(Original)** The thin film interleaver of claim 1, further comprising a single fiber collimator optically coupled to the dual fiber collimator for receiving the first group of channels after the first group of channels passes through the thin film portion.

3. **(Original)** The thin film interleaver of claim 1, the thin film portion further comprising a first matching layer, the first matching layer having an index of refraction for creating an efficient interface between the optical substrate and portions of the thin film portion.

4. **(Original)** The thin film interleaver of claim 1, the thin film portion further comprising a plurality of cavities, wherein each of the plurality of cavities comprises:

a plurality of thin film layers; and

a spacer.

5. **(Original)** The thin film interleaver of claim 4, the thin film portion comprising 4 to 6 cavities.

6. **(Original)** The thin film interleaver of claim 4, each of the plurality of cavities comprising 72 to 74 thin film layers.

7. **(Original)** The thin film interleaver of claim 4, each thin film layer being about $1/4$ of a median wavelength, the median wavelength being that of the median channel of the first and second group of channels.

8. **(Original)** The thin film interleaver of claim 4, one of the plurality of cavities being disposed at the end of the plurality of cavities having a spacer with an index of refraction for matching the dual fiber collimator to air surrounding the dual fiber collimator.

9. **(Withdrawn)** A demultiplexer for use in fiber-optic CWDM applications, the demultiplexer comprising:

a first stage that comprises a thin film interleaver, the thin film interleaver comprising a thin film portion being formed to exhibit a flat top frequency response, wherein the thin film portion passes a first group of channels to pass through the thin film portion while reflecting a second group of channels, each channel of the first group of channels being adjacent to a channel in the second group of channels; and

at least one subsequent stage that includes at least two interleavers for receiving the first and second group of channels.

10. **(Withdrawn)** The demultiplexer of claim 9, the thin film interleaver comprising a thin film portion being formed to exhibit a wide frequency response without increasing cross-talk of adjacent channels.

11. **(Withdrawn)** The demultiplexer of claim 9, the at least two interleavers being fused fiber interleavers.

12. **(Withdrawn)** The demultiplexer of claim 9, the at least two interleavers being thin film interleavers.

13. **(Withdrawn)** The demultiplexer of claim 9, the thin film portion further comprising a plurality of cavities wherein each of the plurality of cavities comprises:
a plurality of thin film layers; and
a spacer.
14. **(Withdrawn)** The demultiplexer of claim 13, the thin film portion comprising 4 to 6 cavities.
15. **(Withdrawn)** The demultiplexer of claim 13, each of the plurality of cavities comprising 72 to 74 thin film layers.
16. **(Withdrawn)** The demultiplexer of claim 13, each thin film being about $1/4$ of a median wavelength, the median wavelength being the median of the first and second group of channels.
17. **(Withdrawn)** The demultiplexer of claim 13, wherein the thin film interleaver is configured to maintain low loss of a signal when small changes in a channel are experienced while maintaining separation between channels.

18. **(Withdrawn)** A method of manufacturing a thin film interleaver for use in fiber-optic CWDM multiplexing and demultiplexing the method comprising:

forming a thin film portion on a dual fiber collimator having an input fiber and a reflection fiber, the thin film portion being formed to:

exhibit a flat top frequency response; and

separate channels input on the input fiber by allowing a first group of channels to pass through the thin film portion while reflecting a second group of channels into the reflection fiber each of the first group of channels being adjacent to a channel in the second group of channels.

19. **(Withdrawn)** The method of claim 18, wherein forming comprises depositing the thin film portion on the dual fiber collimator by chemical deposition.

20. **(Withdrawn)** The method of claim 18, wherein forming comprises depositing the thin film portion on the dual fiber collimator by vapor deposition.

21. **(Withdrawn)** The method of claim 18, wherein forming comprises growing the thin film portion on the dual fiber collimator.

22. **(Withdrawn)** The method of claim 18, further comprising arranging a single fiber collimator to collimate the first group of channels into an output fiber attached to the single fiber collimator.